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ABSTRACT

The process of selecting applicants for admission to a new school of medicine (Southern Illinois University School of Medicine) is examined through the use of multivariate regression techniques. More than 250 variables were analyzed and classified as to source of data: student American Medical College Application Service (AMCAS) application, supplemental application, letters of recommendation, three interviews by members of the faculty and staff. The predictive ability of the classes of variables are examined by each source and again by combination of sources to simulate the order in which data are received by the office of admissions. A curvilinear regression model is utilized to examine the presence of any incremental prediction of the admissions decision that occurs with the addition of squared and cross-product terms. In all analyses, stepwise methods were used to force linear components to enter the regression equation before allowing curvilinear components to enter. When analyzing data from specific sources in isolation, the curvilinear model increases prediction as measured by the squared multiple correlation coefficient in approximately half of the regression equations. When various sources of data are combined to perform the analysis, significant increases in prediction occur in all cases. (Author/DEP)

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THE ADMISSIONS PROCESS:

THE STUDY OF A NEW SCHOOL SELECTING ITS CHARTER CLASS

-A REANALYSIS USING A CURVILINEAR MODEL-

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The Study of a New School Selecting Its Charter Class
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ABSTRACT

The selection process of applicants for admission to a new school of medicine is examined through the use of multivariate regression techniques. More than 250 variables were analyzed and classified as to source of data: student AMCAS application, supplemental application, letters of recommendation, three interviews by members of the faculty and staff. The predictive ability of the classes of variables are examined by each source and again by combination of sources to simulate the order in which data are received by the office of admissions.

A curvilinear regression model is utilized to examine the presence of any incremental prediction of the admissions decision that occurs with the addition of squared and cross-product terms. In all analyses, stepwise methods were used to force linear components to enter the regression equation before allowing curvilinear components to enter. When analyzing data from specific sources in isolation, the curvilinear model increases prediction as measured by the squared multiple correlation coefficient in approximately half of the regression equations. When various sources of data are combined to perform the analysis, significant increases in prediction occur in all cases.

The admissions process is a highly complex and important aspect of professional medical education. The admissions committees of state supported schools have a tremendous responsibility; from a large, well-qualified applicant pool, they must select those who will not only succeed academically but will also contribute to the improvement of the health care delivery system of that state.

Southern Illinois University School of Medicine was established in 1969 in response to health care needs in Illinois and to provide increased opportunities for education in the health field. The advent of this school offered a unique opportunity to initiate a longitudinal research project to study a school of medicine admissions procedure from the beginning. The need to study the admissions process is even more important with the 120% increase in applicants compared to a 50% increase in available positions between 1962 and 1972 (1,2).

Several researchers have examined the demographic and academic background of the applicant in order to predict selection (3,4). Others have investigated the contribution of letters of recommendation (5), the interviewing process (6), and personality characteristics (7).

SIU School of Medicine has investigated the selection process for its charter class which matriculated in June, 1973 (8). In addition to the admissions procedures, performance studies have been initiated that will help to determine the efficacy of the model adopted. These studies are continuing on subsequent classes to evaluate the stability of selection criteria over time. The present paper reports further analysis of the selection process for the charter class; therefore, a summary of the procedures and findings of that research is in order.*

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*The earlier paper is available from Beth Dawson, Southern Illinois University School of Medicine, Springfield, Illinois 62704.

SUMMARY OF PREVIOUS STUDY

The School of Medicine utilizes basic science facilities on the Carbondale campus of Southern Illinois University and the clinical facilities of two large hospitals in Springfield, Illinois. It has a three year curriculum based on an organ system approach with an emphasis on curricular innovation.

More than 1400 applications for the class entering in 1973 were received through the nation-wide American Medical College Application Service (AMCAS) used by most medical schools in the United States. Eligible applicants were requested to complete a supplemental application and have letters of recommendation submitted. A total of 452 students were interviewed. Typically, there were three interviews, one each by a member of the Student Affairs staff, a member of the Admissions Committee or faculty, and a community physician with a clinical appointment to the faculty. The applicant's file was then arbitrarily assigned to one member of the Admissions Committee or the Student Affairs staff to review and present to the full Committee following which a vote was taken to accept, deny, or place the applicant on an alternative list. A total of 88 students was accepted in this manner and 48 actually matriculated.

Data were collected from the files of all accepted applicants and an approximately equal-sized random sample of rejected applicants. Information was collected on over 250 variables that were thought to have potential relevance; sources included the AMCAS and supplementary applications, letters of recommendation, interviewer comments, and Admissions Committee minutes. The basic biographic and academic data were taken from the AMCAS application. In addition, a content analysis was performed on the applicant's responses to general, open ended questions that were included on the AMCAS and SIU supplemental application forms. The letters of recommendation and the interviews were also content analyzed to determine both the frequency with which various per-

sonal and/or academic characteristics were mentioned and whether they were mentioned in a positive, negative, or neutral manner.

Preliminary analyses consisted of frequencies and descriptive statistics for the variables described above. Correlations were found between the variables and the final outcome of accept or reject. Separate stepwise regression procedures were performed for discrete subsets of data to determine the predictive ability of specific phases of the admissions process. Table I presents a summary of the findings of the regression analyses.

Different combinations of the subsets of variables found to be significant in the separate regression analyses were combined in stepwise procedures to simulate the order of information utilization in the admissions process; a summary of results are shown in Table II. For all stepwise procedures, only those variables with coefficients greater than zero at $\alpha \leq .10$ were retained in the regression equations.

The first stepwise analysis in Table II combined the variables that were normally available to the admissions office upon receipt of the application; these included demographic variables, academic information, and comments the student might have made on the application. Two demographic variables and three academic variables entered the regression equation and a Multiple R of .672 was obtained. The second stepwise analysis added information available from the letters of recommendation; this information failed to improve upon the prediction obtained when using information only from the application.

The next three stepwise analyses were obtained by adding comments made in one of the interviews to the basic information available on the application. When the Office of Student Affairs interview notes were added, 14 variables combined to produce a Multiple R of .819. Addition of the Admissions Committee interview comments resulted in 10 variables entering the regression equation

and a Multiple R of .767. The clinical associate interview comments failed to increase the prediction achieved with the basic information alone.

Three similar stepwise analyses were performed adding the appropriate interview comments to the significant variables from both the application and the letters of recommendation. When the Office of Student Affairs interview comments were combined with the information just described, 14 variables entered the regression equation and a Multiple R of .823 was obtained. This was not significantly larger than the Multiple R of .819 obtained when the same regression was made omitting information from the letters of recommendation. The addition of the Admissions Committee interview comments to the basic information and letters of recommendation resulted in 11 significant variables with a Multiple R of .777. Again, this result was not significantly larger than that obtained without the use of letters of recommendation. Finally, the clinical associate interview was regressed with the basic information and comments from the letters of recommendation, and, as was expected, prediction was not improved over that obtained with the basic information alone.

The final stepwise analysis in Table II utilized all the subsets of significant variables. Nineteen variables entered the regression equation and a Multiple R of .874 was obtained.

INTRODUCTION TO PRESENT STUDY

The present paper considers an alternate regression model to evaluate whether prediction of the admissions decision can be improved over the traditional analysis summarized above. Specifically, the researchers wished to investigate whether there is an empirical rationale for considering a curvilinear model for predicting admission.* The use of a curvilinear model will result in in-

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*The authors wish to express their appreciation to Professor John Pohlmann for his suggestion to examine the incremental prediction obtained with a curvilinear model.

creased prediction when either of the following conditions are present:

i) The relationship between the criterion and the predictor variable is better described by a quadratic, cubic, or higher order polynomial regression model; or

ii) The interaction between any two predictor variables as they relate to the criterion is better described by the addition of cross-product terms to the regression equation (9).

In considering the applicability of a curvilinear model, the researchers hypothesized the existence of the following relationships between the predictor and criterion variables:

i) Addition of squared and cross-product terms will not significantly increase the prediction as measured by the increment in the squared multiple correlation coefficient when regression is performed on homogeneous sets of variables (the results presented in Table I).

ii) Addition of squared and cross-product terms will significantly increase the prediction as measured by the increment in the squared multiple correlation coefficient when regression is performed on heterogeneous sets of variables (the results presented in Table II).*

METHODOLOGY

The hypotheses considered in this paper refer to the incremental predictive ability of the squared and cross-product terms over and above the less complex linear terms; higher order polynomial terms were not considered due to the increase in the number of predictor variables. It seems reasonable to require that use of a more complex model is justified only if the complex terms con-

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*The authors wish to express their appreciation to Professor Maurice M. Tatsuoka for his suggestion that significant interactions would be more likely to occur when considering cognitive versus personality attributes.

tribute significantly to an increase in the squared multiple correlation coefficient (R^2) achieved in the regression analysis using only linear terms. R^2 was used as the criterion because the researchers feel it is important to examine the increase in the amount of variability accounted for by additional independent variables. The SPSS stepwise multiple linear regression computer program was used for all analyses. All significant linear terms were forced to enter the regression equation before the complex terms (squared variables and cross-products of variables) were allowed to enter. The criterion used for variable selection was that the F-ratio to enter be significant at $\alpha \leq .10$, or, equivalently, that the regression beta weight be significantly greater than zero at $\alpha \leq .10$.

To completely investigate the incremental validity of squared and cross-product terms in the regression equations, all 277 variables, their squares, and cross-products should be considered as potential predictor variables. Using just the variables that entered the regression equations reported in Table II would result in missing contributions by variables that, although their linear component did not add significantly at $\alpha \leq .10$, might result in a significant increase in the R^2 if their squared component or interactions with the other variables were considered. However, utilization of all variables would be ridiculous and, in fact, would lead to over determination of the model with a sample size of 177.

The calculations in Table III guided the researchers in their decision as to which variables to include in the analysis. Due to constraints of the sample size and the computer programs, the decision was made to investigate the incremental validity of squared and cross-product terms that had entered the regression equations summarized in Table I at $\alpha \leq .01$. This procedure eliminated the clinical associate interview regression since the one variable in that equation was not significant at $\alpha \leq .01$. The analyses to test the first hypothesis

consisted of seven separate stepwise regressions using homogeneous subsets of variables. To test the second hypothesis, seven composite stepwise regression analyses were performed to investigate combinations of heterogeneous variables. The regression analyses parallel those reported in Tables I and II that were performed in the previous study summarized above, with the exception of the analyses involving the clinical associate interview.

The researchers were uncomfortable with the stringent significance level imposed by constraints of the sample size. A recent study indicates that greater efficiency and protection against a type II error results when higher F levels are used for variable selection in stepwise multiple regression analysis (10). Consequently, it was decided also to examine a curvilinear model using only two subsets of the variables. The previous study had indicated that academic variables and Office of Student Affairs (OSA) interview variables resulted in the highest prediction as measured by the Multiple R, .622 and .680 respectively. Therefore, to further investigate the first hypothesis of incremental validity obtained using a curvilinear model, separate analyses were performed on the academic variables and the OSA interview variables. For these regressions, all variables entering the previous regression equations at $\alpha \leq .10$ (reported in Table I), along with all squared and cross-product terms, were considered. Six significant academic variables and ten significant OSA variables result in 27 and 65 predictor variables respectively when squared and cross-product terms are included. To investigate the second hypothesis with these two subsets of predictor variables, it was not possible to include all 16 variables resulting in 152 possible independent terms due to constraints of the computer program used for the analysis. To reduce to a manageable number of variables, only those variables were used that entered the two homogeneous regression equations with an F-to-enter greater than 1.00 along with all appropriate cross-product terms between academic and OSA interview variables.

FINDINGS: Using only variables significant at $\alpha \leq .01$ in previous regression analyses. The results of the regression analyses performed on homogeneous sets of variables are shown in Table IV and summarized in Table VI. Only seven analyses are presented since the previous regression on the clinical associate interview had only one variable entering the equation and this variable was not significant at $\alpha \leq .01$.

In four of the regression equations, squared or cross-product variables entered the regression equations after the significant linear variables had been forced. Increments in R^2 can be interpreted as the additional amount of variance accounted for by addition of the complex terms. Table IV illustrates that addition of the complex terms results in significant increments in R^2 of .062 for Academic variables, .039 for Ratings of Letters of Recommendation, .014 for the OSA interview, and .028 for the Admissions Committee interview. Thus, the first hypothesis considered, that addition of squared and cross-product terms does not significantly increase prediction when considering homogeneous variables, is retained in 3 cases and rejected in 4 cases. Of the 4 cases where the increment is statistically significant, however, in only one case, that of regression on academic data, does the increase in the amount of variance accounted for seem to the researchers to be of sufficient practical significance to justify the additional analysis required.

The results of the regression analyses performed on heterogeneous sets of variables are shown in Table V and summarized in Table VI. In all cases, addition of the complex variables significantly increases R^2. The smallest increment (0.072) was observed for basic information available at the time of interview plus characteristics mentioned in the admissions committee interview. The analysis consisting of all subsets of variables yields the most impressive increase (.231) in R^2. Thus, the second hypothesis that an increase in the

Multiple R would result when combining data from different (heterogeneous) sources appears to be viable.

FINDINGS: Using variables significant at $\alpha \leq .10$ in previous study.

Two subsets of the data were considered with a less stringent criterion for inclusion to further assess the hypothesis outlined in the introduction. Table VII presents the analysis of the academic variables in which the linear terms produced a Multiple R of .581; addition of complex variables increased R to .624, an increment of .052 in R^2. The analysis of the Office of Student Affairs interview resulted in ten linear variables with a Multiple R=0.677. Addition of significant squared and cross-product terms increased R to .842, an increment of 0.093 in R^2. The results of these two analyses lead to rejection of the first hypothesis.

Table VIII reports the results of the regression analysis when academic and OSA interview variables are combined. The addition of complex terms increases the Multiple R from .584 to .705 and includes eight new predictor variables improving the proportion of variance accounted for by .121. Four of the complex terms found to have relevance in this analysis are, in fact, heterogeneous variables, i.e., cross-products of variables taken from separate subsets of data. The results do support the second hypothesis of this study. Table IX presents a summary of these three analyses.

DISCUSSION

The present study attempts to assess the incremental prediction of acceptance into medical school that results when squared and cross-product terms are added to linear variables in stepwise multiple regression analysis. The results indicate that modest, significant increases in the amount of variance accounted for, as measured by the squared multiple correlation coefficient, sometimes occur when analyzing data that are homogeneous in nature. More

substantial increases result when heterogeneous sources of data are combined in regression analyses.

Several shortcomings of the present study should be noted. First, no attempt was made in this paper to interpret the findings in a practical manner. Attention was devoted entirely to assessing the incremental prediction obtained with squared and cross-product terms. While this omission is not crucial to the purposes of the present paper, if the results were to be of use in interpreting important variables in the admissions process, an attempt should be made to explain the meaning of the interaction terms in such a way to be of use to admissions officers and committee members.

The general conclusions from the analyses summarized in this paper indicate that consideration of a curvilinear model adds significantly to the prediction, especially when different types of variables are used. However, no validation studies have been performed to assess the stability of the prediction. Shrinkage is always expected when a regression equation calculated on one set of data is applied to another sample, and the fact that a greater number of variables are involved in the equation when squared and cross-product terms are used indicates that greater shrinkage may be expected when using the curvilinear model (11). For example, the expected shrinkage of R^2 for the heterogeneous regression equation using academic and OSA interview variables is 0.104 for the linear model and 0.123 for the curvilinear model (12). The increase in shrinkage must be weighed against the higher original R^2 obtained using the more complex model.

Another possible criticism of the present analysis is the criterion used to select potential predictor variables. As the reader may recall, in each homogeneous analysis, variables selected for further analysis were those that had entered previous stepwise regression equations at given α levels (.01 for the comprehensive analysis and .10 for the more in depth analysis of just

the academic and OSA interview subsets of variables). Examining the discriminating power of predictor variables in discriminant function analysis in the two group case led Cochran to suggest that discarding variables at the outset of the analysis may be hazardous (13). Other authors, such as Grizzle, suggest that variables included in multivariate analysis should be those that display a reasonable expectation of discriminating between group differences by themselves (14). Although these authors refer to discriminant analysis, the relationship between this procedure in the two group case and regression analysis has been amply demonstrated (11). In fact, the present study, which considers a dichotomous dependent variable, selection versus rejection, is actually a special case of regression analysis in which the results are equivalent to those that would be obtained using discriminant analysis.

If variables are not pre-selected for inclusion in the regression analysis, the researcher is left with several options for discarding non-contributing variables after the analysis, none of which are particularly satisfying. The step-down procedure discussed by Roy and Bargmann may be used to eliminate non-significant variables one-at-a-time, but this procedure requires an a priori ordering of the variables (15). Forward and backward stepwise procedures have also been developed. The problem with these procedures is that there is no way of assuring that the "best" combination of variables are retained in the regression equation. As most researchers are aware, the addition of one more variable to the set of potential predictors may change the order and number of significant variables in the resulting regression equations. In spite of its shortcomings, the forward stepwise procedure utilized in this study has merit with respect to selecting variables with high predictive ability, as recently shown by Huberty in a study that considered six methods of variable selection (16). An even more recent suggestion by Huberty for consideration in

two group discriminant analysis demonstrates the equivalence of two statistical tests for deleting variables based upon the distance between two populations and multivariate analysis of variance respectively (17).

No consideration has been given to the use of non-normal data in the analyses summarized in this study. Although many of the variables can be assumed to be distributed normally, several dichotomous (e.g., science or pre-med major) and polychotomous (e.g., interview comments) variables were used. Similar neglect has been accorded the problem of missing observations, a situation that was handled in the present study by examining only those cases that had complete data for each analysis. Huberty presents a comprehensive survey of the literature in those two areas and indicates that much more study is needed before generalizable conclusions may be drawn (18).

In conclusion, it is difficult to assess whether the increment in prediction is worth the tremendous expenditure of time and energy in a study involving such a large number of variables. With a smaller number of predictors, the authors feel the investigation of a curvilinear model is worthwhile, especially if the data are heterogeneous variables.

TABLE I

SUMMARY OF STEPWISE REGRESSION ANALYSES
USING HOMOGENEOUS SUBSETS OF DATA

Subset of Data	# Variables Entering	R	R^2
Demographic	6	.514	.264
Academic	6	.622	.387
Student Comments on Applications	5	.383	.147
General Ratings of Letters of Recommendation	4	.470	.221
Comments in Letters of Recommendation	4	.318	.101
Office of Student Affairs Interview	10	.680	.462
Admissions Committee Interview	3	.334	.112
Clinical Associate Interview	1	.177	.031

TABLE II

SUMMARY OF STEPWISE REGRESSION ANALYSES
USING HETEROGENEOUS SUBSETS OF DATA

Regression Combinations	# demo	# acad	student reasons for career choice	# comments in letters of recommend.	# comments from interview notes	Total # Variables	Mult R Obtained	R^2
1. Basic info available at time of application	2	3	0	-	-	5	.672	.452
2. Basic info plus letters of recommendation	2	3	0	0	-	5	.672	.452
3. Basic info plus OSA interview	3	2	2	-	7	14	.819	.671
4. Basic info plus AC interview	3	3	1	-	3	10	.767	.588
5. Basic info plus clin assoc. interview	2	3	0	-	0	5	.672	.452
6. Basic info, letters, plus OSA interview	3	2	1	2	6	14	.823	.677
7. Basic info, letters, plus AC interview	3	3	1	1	3	11	.777	.604
8. Basic info, letters, plus clin assoc int.	2	3	0	0	0	5	.672	.452
9. Basic info, letters, plus all interviews	3	2	1	3	10	19	.874	.764

TABLE III

NUMBER OF POTENTIAL PREDICTOR VARIABLES

Criterion for Inclusion in Analysis	Number of Variables	Number of Squared Variables	Number of Cross-Product Terms*	Total Number of Variables in Analysis
None	277	277	38,226	38,780
Significant in previous regression at $\alpha \leq .10$	39	39	741	819
Significant in previous regression at $\alpha \leq .05$	27	27	351	405
Significant in previous regression at $\alpha \leq .01$	15	15	105	135

*Number of cross-product terms: $\sum_{i=1}^{n-1} = \frac{n(n-1)}{2}$

TABLE IV

HOMOGENEOUS SETS OF VARIABLES
REGRESSION ANALYSES - USING ONLY VARIABLES
SIGNIFICANT AT $\alpha \leq .01$ IN PREVIOUS REGRESSION ANALYSES

Demographic Data (n=177)

Variable	b	beta	R	R^2
Age	-0.089	-0.337	0.324	0.105
Occupation of Mother	-0.308	-0.264	0.418	0.175
Constant	2.314			

Academic Data (n=174)

Variable	b	beta	R	R^2
Science MCAT Score	0.002	0.314	0.456	0.208
Overall GPA-Junior Year	-2.377	-2.240	0.538	0.290
Undergraduate Science or Pre-Med Major	-0.496	-0.653	0.562	0.316
MCAT Trend	0.069	0.145	0.586	0.344
Jr. Year GPA^2	0.353	2.064	0.624	0.389
Jr. Year GPA X Undergrad Major	0.197	0.994	0.637	0.406
Constant	3.668			

Comments on Applications (n=169)

Variable	b	beta	R	R^2
Total # Med. Schools Applied To	0.035	0.228	0.228	0.052
Constant	1.267			

General Ratings of Letters of Recommendation (n=177)

Variable	b	beta	R	R^2
1 or More Strong Ratings	0.198	0.688	0.345	0.119
1 or More Outstanding Ratings	0.672	0.743	0.422	0.178
1 or More Strong Ratings^2	-0.018	-0.370	0.445	0.198
1 or More Outstanding Ratings^2	-0.102	-0.515	0.466	0.217
Constant	0.589			

TABLE IV (cont.)

Comments in Letters of Recommendation (n=177)

Variable	b	beta	R	R^2
Uncertain of Ability	0.421	0.194	0.194	0.038
Constant	0.679			

Office of Student Affairs Interview (n=145)

Variable	b	beta	R	R^2
GPA	0.886	0.996	0.419	0.176
Hobbies Extracurricular Activities	0.278	0.277	0.505	0.255
Where Practice	0.192	0.207	0.559	0.313
Adaptability - Academic Risk	0.202	0.197	0.592	0.350
GPA^2	-0.135	-0.666	0.603	0.364
Constant	-1.103			

Admissions Committee Member Interview (n=126)

Variable	b	beta	R	R^2
Self-Assessment	1.559	0.931	0.239	0.057
$Self\text{-}Assessment^2$	-0.290	-0.712	0.291	0.085
Constant	-0.269			

TABLE V

HETEROGENEOUS SETS OF VARIABLES

REGRESSION ANALYSES - USING ONLY VARIABLES
SIGNIFICANT AT $\alpha \leq .01$ IN PREVIOUS REGRESSION ANALYSES

Basic Information Available at Time of Application (n=166)	b	beta	R	R^2
Science MCAT	0.002	0.286	0.458	0.210
Age	0.171	0.660	0.533	0.284
Occupation of Mother	-0.249	-0.211	0.571	0.326
Overall GPA - Junior Year	-1.263	-1.195	0.599	0.359
Undergraduate Science or Pre-Med Major	-0.602	-0.792	0.617	0.381
MCAT Trend	0.042	0.087	0.629	0.396
Total # Med. Schools Applied To	0.010	0.069	0.639	0.409
Age X GPA	-0.071	-0.763	0.675	0.455
GPA X Undergrad Major	0.225	1.133	0.687	0.472
GPA^2	0.204	1.195	0.695	0.483
Constant	2.394			

Basic Information Plus Letters of Recommendation (n=129)	b	beta	R	R^2
Science MCAT	0.002	0.298	0.424	0.180
Overall GPA - Junior Year	-1.445	-1.316	0.497	0.247
Undergraduate Science or Pre-Med Major	-0.428	-0.563	0.551	0.304
MCAT Trend	0.053	0.115	0.580	0.336
Occupation of Mother	-0.243	-0.197	0.598	0.357
GPA^2	0.269	1.548	0.650	0.435
Age	0.249	0.934	0.669	0.448
GPA X Undergrad Major	0.185	0.934	0.685	0.469
Age X GPA	-0.092	-0.920	0.694	0.482
Constant	2.085			

Basic Information Plus OSA Interview (n=136)	b	beta	R	R^2
Interview Comment - GPA	1.007	1.125	0.407	0.165
Interview Comment - Hobbies, etc.	0.275	0.273	0.505	0.255
Interview Comment - Desired Pract. Location	1.013	1.095	0.565	0.320
Interview Comment - Adaptability	0.826	0.808	0.606	0.367
Total # Med. Schools Applied To	0.024	0.173	0.633	0.401
Undergraduate Science or Pre-Med Major	0.179	0.231	0.655	0.429
MCAT Trend	0.046	0.100	0.670	0.449
Age	0.135	0.503	0.687	0.472
Age X Interview Comment - Adaptability	-0.091	-0.772	0.714	0.510
Interview Comment - GPA^2	-0.189	-0.918	0.733	0.538
Occupation of Mother	-0.125	-0.103	0.741	0.549
Interview Comment - Desired Pract. Location X Interview Comment - Adaptability	-0.389	-1.339	0.754	0.568
Interview Comment - $Adaptability^2$	0.156	0.679	0.762	0.581
Constant	-3.528			

TABLE V
(Cont.)

Basic Information Plus AC Interview (n=117)	b	beta	R	R^2
Undergraduate Science or Pre-Med Major	0.196	0.254	0.287	0.082
Overall GPA - Junior Year	-1.484	-1.283	0.430	0.185
Occupation of Mother	-0.258	-0.217	0.486	0.236
Interview Comment - Self-Assessment	1.474	0.914	0.527	0.278
Age	-0.112	-0.409	0.559	0.312
Highest Science MCAT	0.001	0.127	0.575	0.331
GPA^2	0.266	1.491	0.603	0.364
Interview Comment - $Self\text{-}Assessment^2$	-0.258	-0.658	0.621	0.385
Age X GPA	0.012	0.231	0.634	0.403
Constant	1.256			

Basic Information, Letters, Plus OSA Interview (n=112)	b	beta	R	R^2
OSA Comment - GPA	1.536	1.735	0.382	0.146
OSA Comment - Hobbies	0.279	0.286	0.485	0.235
OSA Comment - Practice Location	0.265	0.310	0.561	0.314
OSA Comment - Adaptability	1.426	1.503	0.594	0.353
Undergraduate Major	0.189	0.242	0.624	0.390
1 or More Outstanding Ratings	0.086	0.110	0.648	0.420
OSA Comment - GPA^2	-0.226	-1.144	0.674	0.454
OSA Comment - Practice Location X OSA Comment - Adaptability	-0.240	-0.906	0.691	0.477
Occupation of Mother	-0.225	-0.181	0.701	0.491
Age X OSA Comment - Adaptability	-0.148	-1.249	0.721	0.520
Age	0.464	1.678	0.746	0.557
Occupation of Mother X OSA Comment - Practice Location	0.320	0.681	0.757	0.573
Age^2	-0.017	-0.731	0.766	0.587
OSA Comment - GPA X Occupation of Mother	0.290	-0.629	0.774	0.599
Constant	-4.405			

TABLE V
(Cont.)

Basic Information, Letters, Plus AC Interview (n=100)	b	beta	R	R^2
Undergraduate Science or Pre-Med Major	0.242	0.320	0.350	0.122
Overall GPA - Junior Year	0.999	0.886	0.471	0.221
Interview Comment - Self-Assessment	1.977	1.364	0.521	0.271
MCAT Trend	1.156	2.807	0.552	0.305
Age	-0.070	-0.251	0.579	0.335
Interview Comment - Self-Assessment X MCAT Trend	-0.203	-1.727	0.622	0.386
Interview Comment - Self-Assessment^2	-0.380	-1.077	0.653	0.427
Occupation of Mother	-0.189	-0.151	0.672	0.451
Stable or Increasing MCAT^2	-0.050	-0.983	0.686	0.471
Constant	-5.223			

Basic Information, Letters, OSA Plus AC Interview (n=98)	b	beta	R	R^2
Undergraduate Major	0.204	0.261	0.321	0.103
Junior Year GPA	0.819	0.728	0.449	0.202
AC - Self-Assessment	1.229	0.860	0.504	0.254
MCAT Trend	1.079	2.647	0.535	0.287
Science MCAT	0.000	0.043	0.564	0.318
Age	0.341	1.203	0.582	0.339
OSA Comment - Hobbies X OSA Comment - Practice Location	0.072	0.270	0.640	0.410
Age X AC - Self-Assessment	-0.192	-1.719	0.680	0.462
Occupation of Mother	-0.123	-0.100	0.693	0.481
Junior Year GPA X MCAT Trend	-0.189	-1.630	0.721	0.520
OSA Comment - GPA X OSA Comment - Adaptability	0.055	0.202	0.742	0.551
MCAT Trend^2	-0.048	-0.962	0.755	0.570
Constant	-5.438			

TABLE VI

SUMMARY OF REGRESSION RESULTS USING VARIABLES
SIGNIFICANT AT $\alpha \leq .01$ IN PREVIOUS REGRESSION ANALYSES

Homogeneous Sets of Variables

	# Linear Predictors	R^2	# Incremental Predictors	R^2	Increment in R^2
Demographic Data	2	0.175	0	0.175	0.000
Academic Data	4	0.344	2	0.406	0.062
Comments on Applications	1	0.052	0	0.052	0.000
Ratings of Letters	2	0.178	2	0.217	0.039
Comments in Letters	1	0.038	0	0.030	0.000
OSA Interview	4	0.350	1	0.364	0.014
Adm. Committee Interview	1	0.057	1	0.085	0.028

Heterogeneous Sets of Variables

Basic Information Available (at time of interview)	7	0.409	3	0.483	0.074
Basic Information Plus Letters of Recommendation	5	0.357	4	0.482	0.125
Basic Information Plus OSA Interview	8	0.472	5	0.581	0.109
Basic Information Plus AC Interview	6	0.331	3	0.403	0.072
Basic Information, Letters, OSA Interview	6	0.420	8	0.599	0.179
Basic Information, Letters, AC Interview	5	0.335	4	0.471	0.136
Basic Information, Letters, OSA & AC Interviews	6	0.339	6	0.570	0.231

TABLE VII

SEPARATE REGRESSION RESULTS FOR ACADEMIC INFORMATION AND OSA INTERVIEW USING VARIABLES SIGNIFICANT AT $\alpha \leq .10$ IN PREVIOUS REGRESSION ANALYSES

Academic Variables (n=174)	b	beta	R	R^2
Highest Science MCAT	0.009	0.280	0.438	0.192
Junior Year GPA	6.746	1.292	0.533	0.285
Undergraduate Major	2.845	0.761	0.550	0.303
MCAT Trend	-1.698	-0.730	0.564	0.319
# MCAT's	-1.321	-0.348	0.581	0.338
Junior Year GPA^2	-1.366	-1.623	0.605	0.367
Science MCAT X Undergraduate Major	-0.006	-1.151	0.614	0.378
MCAT Trend X # MCAT's	0.576	0.919	0.624	0.390
Constant	-0.747			

OSA Interview Variables (n=145)	b	beta	R	R^2
GPA	0.928	1.043	0.419	0.176
Hobbies, etc.	0.266	0.266	0.505	0.255
Desired Practice Location	1.697	1.827	0.559	0.313
Adaptability	-0.405	-0.394	0.592	0.350
Sincerity Regarding Motivation	0.609	0.690	0.611	0.373
GPA Trend	0.192	0.112	0.625	0.391
Course Load	2.590	1.147	0.638	0.408
Articulate	0.665	0.657	0.650	0.422
Evaluation of Letters	0.285	0.224	0.660	0.436
Emotional Stability	0.609	0.145	0.677	0.459
Desired Practice Location X Course Load	-0.771	-1.974	0.693	0.480
GPA^2	-0.157	-0.777	0.706	0.499
Course Load X Articulate	-0.567	-1.267	0.718	0.515
Desired Practice Location X Sincerity Regarding Motivation	-0.227	-0.807	0.727	0.529
Adaptability^2	0.144	0.628	0.735	0.540
Desired Practice Location X Articulate	0.262	0.842	0.743	0.552
Constant	-8.204			

TABLE VIII

REGRESSION RESULTS UTILIZING ALL ACADEMIC
AND OSA INTERVIEW VARIABLES SIGNIFICANT AT $\alpha \leq .10$
(n=142)

Variable	b	beta	R	R^2
OSA Comment - GPA	-0.263	-0.300	0.420	0.176
OSA Comment - Hobbies	-1.333	-1.336	0,514	0.264
OSA Comment - Practice Location	0.590	0.640	0.575	0.331
OSA Comment - Adaptability	0.833	0.814	0.611	0.373
Undergraduate Major	-0.505	-0.665	0.630	0.396
OSA Comment - Articulate	0.662	0.657	0.646	0.418
OSA Comment - Sincerity	0.605	0.696	0.662	0.438
# MCAT's	-1.318	-1.744	0.675	0.456
MCAT Trend	0.120	0.265	0.714	0.510
OSA Comment - Emotional Stability	0.667	0.161	0.726	0.527
OSA Comment - Evaluation of LOR	0.267	0.209	0.739	0.547
# Poor Grades	0.397	1.055	0.748	0.559
Junior Year GPA	0.188	0.168	0.757	0.573
OSA Comment - Course Load	-3.855	-1.476	0.764	0.584
OSA Comment - GPA^2	-0.253	-1.269	0.782	0.613
# Poor Grades X OSA Comment - Hobbies	-0.149	-0.814	0.795	0.632
OSA Comment - Sincerity X OSA Comment - Articulate	-0.216	-0.723	0.804	0.646
OSA Comment - Hobbies X OSA Comment - Course Load	1.112	2.592	0.811	0.658
# MCAT's X OSA Comment - Course Load	0.562	1.474	0.822	0.675
OSA Comment - GPA X Undergraduate Major	0.513	2.321	0.829	0.687
OSA Comment - Hobbies X OSA Comment - Adaptability	-0.287	-0.868	0.834	0.696
Undergraduate Major X OSA Comment - Practice Location	-0.145	-0.615	0.839	0.705
Constant	2.236			

TABLE IX

SUMMARY OF REGRESSION RESULTS USING VARIABLES
SIGNIFICANT AT $\alpha \leq .10$ IN PREVIOUS REGRESSION ANALYSIS

Homogeneous Sets of Variables

	# Linear Predictors	R^2	# Incremental Predictors	R^2	Increment in R^2
Academic Data	5	0.338	3	0.390	0.052
OSA Interview	10	0.459	6	0.552	0.093
Heterogeneous Sets of Variables					
Academic Plus OSA Interview	14	0.584	8	0.705	0.121

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